CHAPTER 5

Environmental Consequences

Chapter 5 provides information on the methods of analysis applied in the SWEA and the results of analyses for SNL/CA. The chapter begins with an introduction and a summary of the impact assessment methodologies that have been applied. It continues with descriptions of the impacts of the No Action, the Planned Utilization and Operations, and the Maximum Operations Alternatives. For each alternative, impacts are presented by resource area (for example, infrastructure, land use, geology and soils) or topic area (for example, waste generation, transportation, environmental justice).

5.1 INTRODUCTION

Chapter 5 provides an analytical comparison of the environmental impacts associated with the alternatives. Section 5.2 contains a summary discussion of the methodologies used to assess potential impacts. Section 5.3, No Action Alternative; Section 5.4, Planned Utilization and Operations Alternative; and Section 5.5, Maximum Operations Alternative are formatted so that, within each alternative, the discussion is divided into the following resource and topic areas:

- Land Use and Visual Resources
- Geology and Soils
- Water Resources and Hydrology
- Biological Resources
- Cultural Resources
- Air Quality
- Infrastructure
- Transportation
- Waste Generation
- Noise
- Human Health and Worker Safety (including impacts from accidents)
- Socioeconomics
- Environmental Justice

Section 5.6, Accidents, discusses impacts of accidents for all three alternatives. For comparison, environmental emissions and other potential environmental effects are presented with regulatory standards or guidelines, as appropriate. However, for *National Environmental Policy Act 1969* (NEPA) purposes, compliance with regulatory standards is not necessarily an indication of the significance or severity of the environmental impact.

Several resource-specific evaluations have been performed that address the consequences and risks associated with the National Nuclear Security Administration (NNSA) operations at SNL/CA. Each evaluation has a unique scope and purpose. Figure 5-1 illustrates how the facility-based assessments and specific evaluations and consultations flow into the SNL/CA SWEA.

A comparison of impacts among alternatives is presented in Section 5.7. A discussion of cumulative impacts is presented in Chapter 6.

5.2 METHODOLOGY

5.2.1 Land Use and Visual Resources

A comparative methodology was used to determine impacts to SNL/CA land use. Facility operations and any construction or other modification activities associated with each alternative were compared to the existing conditions. Impacts were identified related to changes in land use classifications, extent of use, alternative or conflicting uses, and accessibility concerns.

The analysis of visual impacts was also comparative and consisted of a qualitative examination of potential changes in visual resources, scenic values (attractiveness), and view corridors (visibility). Aspects of visual modification examined included site development or modification activities that could alter the visibility of SNL/CA structures or obscure views of the surrounding landscape, and changes in land cover that could make structures more visible.

5.2.2 Geology and Soils

Geology and soils analyses encompassed three distinct areas: seismic, slope stability, and soil contamination. The consequences of seismic activity at SNL/CA are addressed within the accident analysis section (5.6).

The slope stability analysis used a map to locate SNL/CA facilities near areas with potentially unstable slopes (at least 10 percent). The 10 percent value was selected as a conservative screening criterion based on the dry site soil conditions and no previous slope stability problems at SNL/CA. For each SNL/CA facility identified, field observations were conducted to support a qualitative evaluation of the effects of SNL/CA activities on these slopes.

The soil contamination analysis considered the potential for human contact of near-surface (the top 6 inches to 1 foot [ft]) contaminated soils and limitations on future land use of these areas. The analysis examined the characteristics of sites where soil contamination could be present (environmental restoration sites). Soil contaminant